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## Seasonal variability of evapotranspiration in the central Andes of Peru using eddy covariance techniques and empirical methods

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In this study, the real evapotranspiration (ET) obtained using the eddy covariance (EC) technique from field crops located in the central Peruvian Andes (Huancayo Observatory, 12.04° S, 75.32°, 3350 msnm) is analyzed. Data from a sonic anemometer and a krypton hygrometer are used to estimate daily and monthly ET variability and to explore relationships with meteorological and surface variables. The results show that the mean value of daily evapotranspiration is estimated to be 3.45 mm/day during the wet season (January to March) while in the dry season (June to August) the value is 0.95 mm/day. In addition, linear regressions were used in order to evaluate the relationship of meteorological variables with evapotranspiration. As a result, solar radiation is the meteorological variable that has a strong relationship with evapotranspiration during the wet season ( $r^2=0.76$ ,  $p$ -value  $<0.005$ ) and soil moisture during the dry season ( $r^2=0.77$ ,  $p$ -value  $<0.005$ ). These results indicate a clear water-energy limitation depending on the season. Besides, the empirical evapotranspiration equations of FAO Penman-Monteith, Priestley-Taylor and Hargreaves were validated. Where the Priestley-Taylor equation is the empirical equation that best fits the observed data of evapotranspiration by EC ( $r^2=0.70$ ,  $p$ -value  $< 0.005$ ).